












Date: Wednesday, 3/7/2007 1:18:31 PM  
 User: Kim Johnston

## Process Sheet

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : 407 FWD X-TUBE
Job Number : 31054	
Estimate Number : 12348	
P.O. Number : <i>N/A</i>	Part Number : D407667105
This Issue : 3/7/2007 S.O. No. : <i>N/A</i>	Drawing Number : D407-667-145 REV B
Prsht Rev : NC	Project Number : N/A
First Issue : <i>N/A</i> Type : LANDING GEAR	Drawing Revision : <i>N/A</i>
Previous Run : 30781	Material : <i>N/A</i>
Written By : <i>[Signature]</i>	Due Date : 3/23/2007 Qty: 1 Um: Each
Checked & Approved By : <i>[Signature]</i> 07.03.07	
Comment : Est Rev 05.09.01 Add holes for compatibility with Bell Skidtubes KJ/JLM	

## Additional Product

Job Number:	
Seq. #:	Machine Or Operation: Description :
2.0	DC DOCUMENT CONTROL
	 
Comment:	DOCUMENT CONTROL
Previous Run	Photocopy bluefile and create labels as per PPP D206-667-105 CHG002 <i>KS 07.03.07</i> Each
2.0	LANDING GEAR 1 LANDING GEAR RESOURCE 1
	 
Comment:	LANDING GEAR RESOURCE 1
Additional Product	PULL FROM STOCK
	1 X D407-667-105 B <i>19143</i> CHG001
	1 X D407-667-105 B CHG001 <i>RT 07-03-28</i>
3.0	D407667105 FWD Crosstube
	 
Comment:	Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)
	FWD Crosstube
4.0	D2856400 Abrasion Strip
	 
Comment:	Qty.: 1.2138 f(s)/Unit Total : 1.2138 f(s)
	Pick: <i>N/A</i>
	Qty Part number Description Batch
	2 D2856-400(Cut to 6.94") Abrasion Strip <i>Assembly installed</i>
5.0	D2873043 Nut Plate Assembly
	 
Comment:	Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)
	Pick: <i>[Signature]</i>
	Qty Part number Description Batch
	2 D2873-043 Nut Plate <i>31192</i> <i>RT 07-03-28</i>

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Date: Wednesday, 3/7/2007 1:18:31 PM  
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Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 FWD X-TUBE

Job Number: 31054

Part Number: D407667105

Job Number:



Seq. #:

Machine Or Operation:

Description:

6.0

D2873045

Nut Plate Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2873-045

Nut Plate

B29107

AT 07-03-28

7.0

D28911

Support 2.25 dia



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2891-1

Support

*N/A  
already installed*

8.0

MS20601AD4W10

RIVET



Comment: Qty.: 14.0000 Each(s)/Unit Total: 14.0000 Each(s)

Pick:

Qty Part number Description Batch

14 MS20601AD4W10 Rivet

103395

AT 07 03 28

9.0

MS2192020

Clamp (per MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s)

Pick:

Qty Part number Description Batch

4 MS21920-20

Clamp

10.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install abrasion strips as per QSI 035 using DT8579. Note: (3) top holes should be facing up.

2-Install supports and clamps as per Dwg D407-667-145. Torque clamps to 80-100 in lb

3-Install nut plates as per Dwg D407-667-145. Touch-up rivet heads with Imron paint.

AT 07-03-28

*already installed*

*[Signature]*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 FWD X-TUBE

Job Number: 31054

Part Number: D407667105

Job Number:



Seq. #:

Machine Or Operation:

Description :

11.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

07-04-17

12.0

SPRAY PAINTING

SPRAY PAINTING

Comment: SPRAY PAINTING  
REPAINT CUFFS

07-04-17

13.0

QC14

Inspect Spray Paint



Comment: Inspect Spray Paint

07-04-18

14.0

PACKAGING 1

PACKAGING RESOURCE #1

Comment: PACKAGING RESOURCE #1  
Pick Packing Kit

15.0

AN532A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Bolt

Batch:            ✓ m11931 in old kit

16.0

MS21042L5

Nut



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Nut

Batch:            ✓ m 5289 in old kit

17.0

AN510A

Bolt



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)

Batch: M104093 4x ✓

18.0

AN530A

BOLT



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:Packing Kit

Qty Part number

4 AN5-30A

Description Batch

Bolt

M102083 4x ✓

7/4/18 59

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☐ No ☒ DQA: ☒ Date: 07/04/19

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Job Number: 31054

Part Number: D407667105

Job Number:



Seq. #:

Machine Or Operation:

Description :

19.0

AN960JD516

Washer



Comment: Qty.: 18.0000 Each(s)/Unit Total: 18.0000 Each(s) 8 in add kit m11931

Pick: Packing Kit

Qty Part number Description Batch

18 AN960JD516 Washer M102519 10X

7/4/18 SQ

20.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

7/4/18 (U) C207104/18 (U)

21.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D407-667-105

Location: B

PPP Rev: B

7/4/18 (U)

22.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

7/4/18 (U) 7/4/18

Job Completion



7/4/18

<b>DART</b>		TEL: 1-613-632-3336 FAX: 1-613-632-4443	
TRANSPORT CANADA APPROVAL 09-89			
P/N	D407-667-105	CHG	CHG001
DESC	Crosstube Fwd High	SIC	SH01-5
LOT	B19143	SIC	SR01304NY
MODEL	Bell 407	SIC	
MADE IN CANADA			

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries





DESIGN PH	DRAWN BY PH	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED <del>PH</del> DS	APPROVED <del>PH</del> DS	DRAWING NO. D407-667-145	REV. B SHEET 1 OF 3
DATE 05.07.26		TITLE CROSSTUBE ASS'Y (407 HIGH FWD)	SCALE NTS
A	02.05.08	NEW ISSUE	
B	05.07.26	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	

RELEASED  
05.07.26

**UNDER REVIEW**  
06.08.10  
re-draw detail  
RA  
07.03.07

Qty	Part Number	Description
X	D407-667-145	CROSSTUBE ASSEMBLY (407 HIGH FWD)
1	D6010-115	CROSSTUBE
2	D2856-400-694	ABRASION STRIP
2	D2873-043	NUT PLATE
2	D2873-045	NUT PLATE
2	D2891-1	SUPPORT
14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
4	MS21920-20	CLAMP

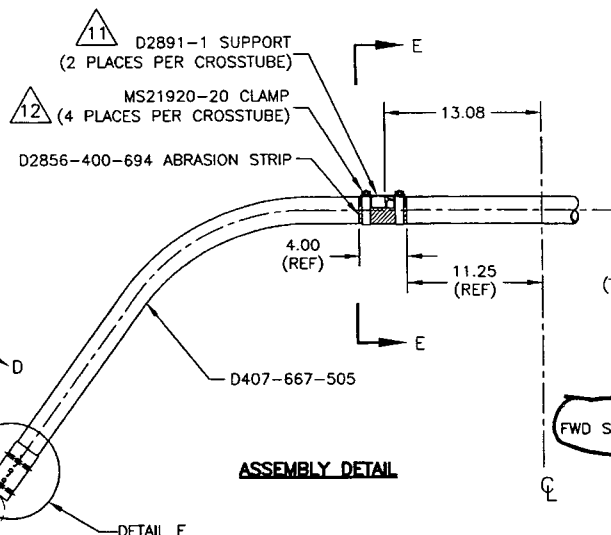
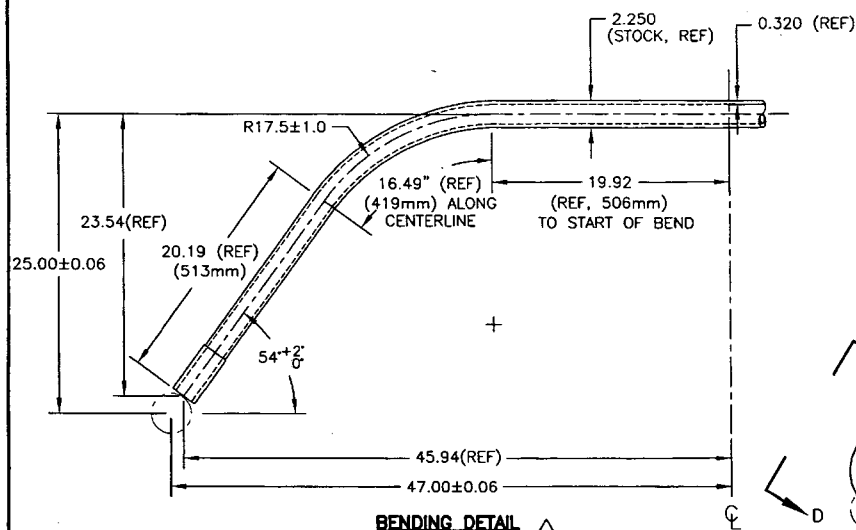
#### GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6010-115  
FINISHED LENGTH = 113.20±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-400-694 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2891-1 SUPPORT, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) SEAL EDGES OF SUPPORTS AND ABRASION STRIP USING SIKAFLEX-241/291 SEALANT (OPTIONAL).
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

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**B**  $\varnothing 0.323^{+0.005}_{-0.000}$   
(TYP 5 PLACES PER CUFF)  
HOLE TO BE ALIGNED WITHIN  $\pm 0.001$   
OF HLE ON OTHER SIDE OF CUFF

PILOT  $\varnothing 0.128$   
C'SINK  $\varnothing 0.225 \times 100'$   
(TYP 7 PLACES PER CUFF)

FWD SIDE ONLY

DETAIL E  
SCALE 2:5

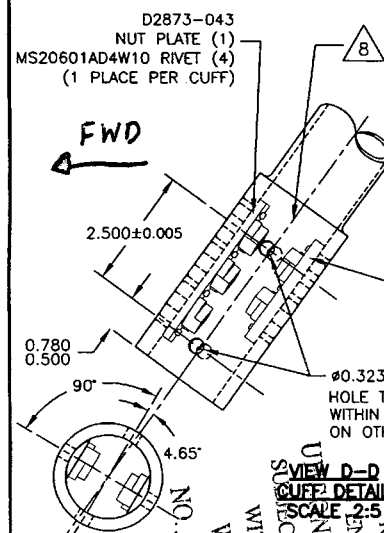
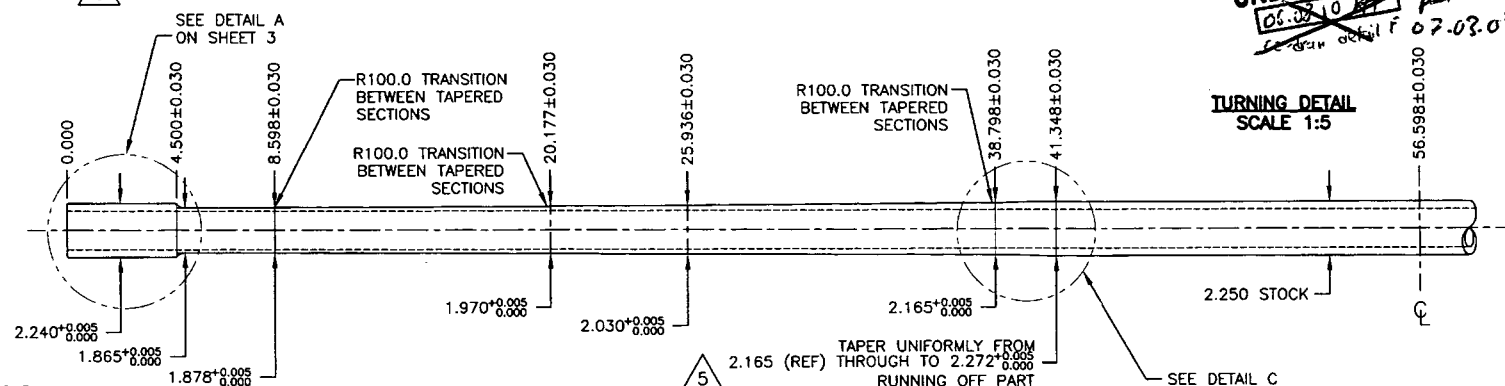
VIEW  
LOOKING  
FWD

UNDER REVIEW

05.07.03

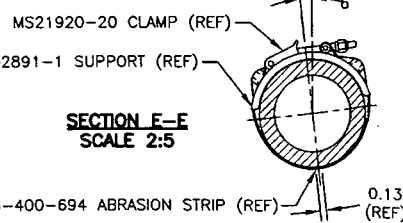
07.03.03

TURNING DETAIL  
SCALE 1:5



D2873-043  
NUT PLATE (1)  
MS20601AD4W10 RIVET (4)  
(1 PLACE PER CUFF)

D2873-045  
NUT PLATE (1)  
MS20601AD4W10 RIVET (3)  
(1 PLACE PER CUFF)



SECTION E-E  
SCALE 2:5

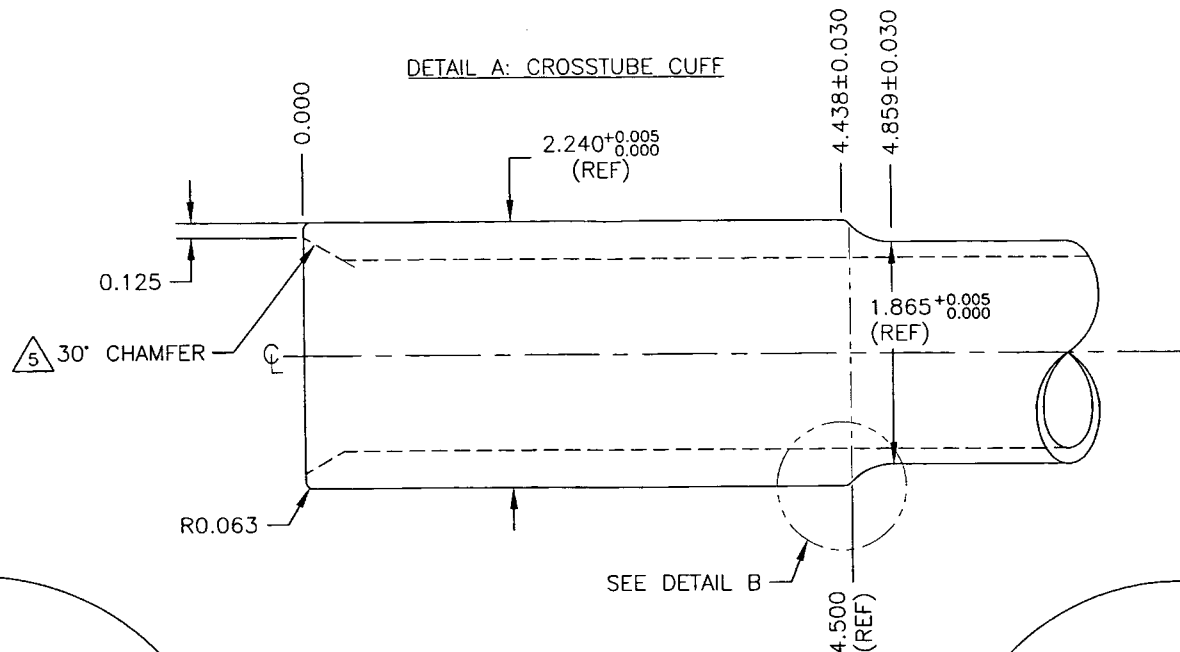
**9**

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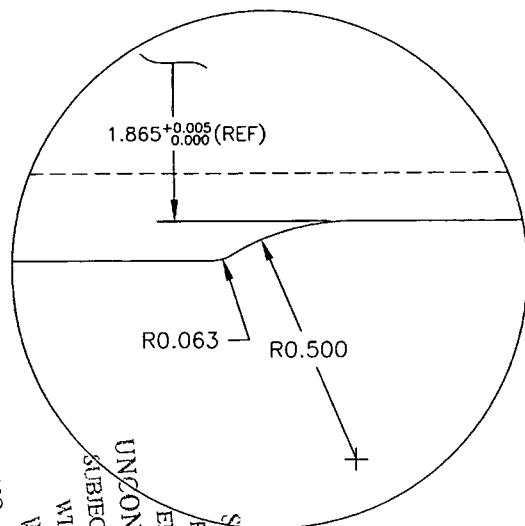
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CHECKED # DS	APPROVED # DS	DRAWING NO. D407-667-145	REV. B SHEET 2 OF 3
DATE 05.07.26	TITLE CROSSTUBE ASS'Y (407 HIGH FWD)	SCALE 1:10	

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WORK ORDER

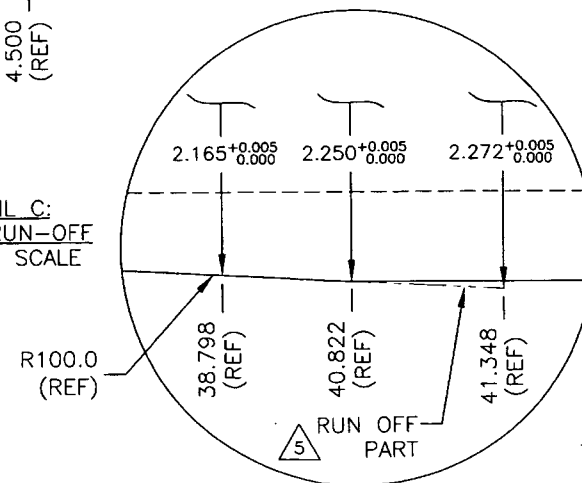


UNDER REVIEW  
~~PH 07.03.08~~  
 PH  
 07.03.08

RELEASED  
 05.07.26



DETAIL B: CUFF  
 TRANSITION  
 SCALE 4:1



DETAIL C:  
 TAPER RUN-OFF  
 NOT TO SCALE

NO. 31054  
 WORK ORDER  
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CHECKED # DS		APPROVED # DS		DRAWING NO. D407-667-145	REV. 8 SHEET 3 OF 3
DATE 05.07.26		TITLE CROSSTUBE ASS'Y (407 HIGH FWD)			SCALE 1:1